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DWPI	L3 or L4	12	L5
DWPI	L1 and (driv$4 near4 equilib$8)	2	L4
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L5: Entry 11 of 12 File: DWPI Nov 29, 1988

DERWENT-ACC-NO: 1988-360860
DERWENT-WEEK: 198850

TITLE: Measurement of capillary blood flow using nuclear magnetic resonance - applying RF pulses to nuclear in magnetic field having large gradient, and obtaining two images with different spatial periodicity

INVENTOR: HAWKES, R C; PATZ, H S

PRIORITY-DATA: 1987US-0103467 (October 1, 1987), 1985US-0765528 (August 14, 1985)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
US 4788500 A	November 29, 1988		014	

INT-CL (IPC): G01R 33/20

ABSTRACTED-PUB-NO: US 4788500A

BASIC-ABSTRACT:

Very slow flow rates are measured by steady state free precession, in which a sequence of radio frequency pulses are applied to nuclei in a magnetic field having a substantial gradient. A driven equilibrium state is obtained and, there is a spatial periodicity in the magnetisation response of the nuclei. Two images are generated.

The spatial periodicity, and the NMR response of flowing nuclei to the spatial periodicity, is different during the two image formations. One image is subtracted from the other, which cancels signals from static nuclei in the signal. The subtraction difference is proportional only to nuclei which are part of relatively slowly flowing liquids.

ADVANTAGE - Accurate imaging of low flow rates. Full information content is retrieved from relaxation signal.

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End of Result Set

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L5: Entry 12 of 12 File: DWPI Feb 26, 1987

DERWENT-ACC-NO: 1987-064917
DERWENT-WEEK: 198709

TITLE: Producing image by NMR technique - using different time intervals between application of radio frequency pulses so as to cancel out any static nuclei

INVENTOR: HAWKES, R C; PATZ, H S

PRIORITY-DATA: 1985US-0765528 (August 14, 1985)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
WO 8701208 A	February 26, 1987	E	030	
AU 8662228 A	March 10, 1987		000	
EP 232387 A	August 19, 1987	E	000	

INT-CL (IPC): G01R 33/20

ABSTRACTED-PUB-NO: WO 8701208A
BASIC-ABSTRACT:

A sequence of radio frequency pulses are applied to nuclei in a magnetic field having an adequate gradient, so that a spatial periodicity in the magnetisation of the nuclei is established. The nuclei reach a state of driven equilibrium by application of radio frequency pulses to the sample.

Two images are generated, using different time intervals between the application of the radio frequency pulses. One image is subtracted from the other, cancelling out any static nuclei in the signal and relatively fast flowing nuclei never reach equilibrium state. This obtains a difference image in which the image elements are each determined solely by the nuclear magnetic resonance of nuclei in slowly flowing fluids in the sample.

ADVANTAGE - Can measure very slow blood flow in capillaries.

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Generate Collection

L5: Entry 1 of 12 File: DWPI Dec 12, 2000

DERWENT-ACC-NO: 2001-210020
DERWENT-WEEK: 200121

TITLE: Compensation pulses identifying method used in medical imaging, involves generating correcting gradient pulse on logical phase encoding axis to compensate phase errors

INVENTOR: HINKS, R S; WASHBURN, S S

PRIORITY-DATA: 1998US-0223527 (December 30, 1998)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
US 6160397 A	December 12, 2000		009	G01V003/00

INT-CL (IPC): G01V 3/00

ABSTRACTED-PUB-NO: US 6160397A
BASIC-ABSTRACT:

NOVELTY - The gradient pulse is generated on a logical slice select axis during RF excitation pulse. The echo signals resulting from excitation pulse are sensed and correcting gradient pulse is generated on logical phase encoding axis to compensate phase errors on logical phase encoding axis.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:

(a) Method for improving magnetic resonance images;

(b) Magnetic resonance imaging system.

USE - Used in medical imaging such as magnetic resonance imaging system.

ADVANTAGE - Improves fast spin echo technique designed to reduce the image artifacts resulting from phase errors in the phase encoding direction.

DESCRIPTION OF DRAWING(S) - The figure shows the graphical representation of an exemplary FSE pulse sequence modified for measurement of phase errors in phase encoding axis including compensation pulses for correction of eddy current.

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L5: Entry 2 of 12 File: DWPI Jun 13, 2000

DERWENT-ACC-NO: 2000-430441
DERWENT-WEEK: 200037

TITLE: Magnetic resonance imaging system includes view sorter to sort views read out from echoes between first and second images

INVENTOR: GULLAPALLI, R P; LONCAR, M J

PRIORITY-DATA: 1996US-0688714 (July 31, 1996)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
US 6075362 A	June 13, 2000		010	G01V003/00

INT-CL (IPC): G01V 3/00

ABSTRACTED-PUB-NO: US 6075362A
BASIC-ABSTRACT:

NOVELTY - After inducing magnetic dipoles in the examination region, several phase encoded and frequency encoded echoes are induced, for generating first and second image echoes with different effective echo times. The echoes of each image closest to selected echo time is phase encoded with a minimal phase encoding. A view sorter sorts the views read out from echoes between first and second images.

DETAILED DESCRIPTION - A temporarily constant magnetic field is generated in an examination region. Dipoles are induced in the examination region for generating radio frequency resonance signals. Gradient amplifiers and gradient magnetic field coils generate slice select, phase and read magnetic field gradient pulses along orthogonal axes across examination region. A receiver demodulates the radio frequency magnetic resonance signals read during the read gradients to produce series of views. An INDEPENDENT CLAIM is also included for magnetic resonance imaging method.

USE - In dual contrast fast spin echo imaging techniques.

ADVANTAGE - Enables reduced scan times and selects effective echo times for both images of a dual contrast technique by using sequence controller.

DESCRIPTION OF DRAWING(S) - The figure shows the illustration of magnetic resonance imaging system.

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Generate Collection

L5: Entry 3 of 12 File: DWPI Aug 23, 2000

DERWENT-ACC-NO: 2000-204408
DERWENT-WEEK: 200063

TITLE: Pulse controller in nuclear magnetic resonance imaging system

INVENTOR: BERNSTEIN, M A; TAN, S G ; ZHOU, X ; TAN, G

PRIORITY-DATA: 1998US-0005768 (January 12, 1998), 1997US-0831684 (April 10, 1997), 1999DE-1001726 (January 18, 1999), 1999JP-0011051 (January 19, 1999), 1999CN-0100850 (January 28, 1999)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
CN 1264043 A	August 23, 2000		000	G01R033/56
US 6011392 A	January 4, 2000		013	G01V003/00
DE 19901726 A1	July 20, 2000		000	G01R033/56
JP 2000201904 A	July 25, 2000		014	A61B005/055

INT-CL (IPC): A61B 5/055; G01R 33/48; G01R 33/56; G01V 3/00

ABSTRACTED-PUB-NO: US 6011392A
BASIC-ABSTRACT:

NOVELTY - A pulse controller is coupled to the excitation unit, gradient units and receiver to conduct scan in which pulse sequence is performed for acquiring digitized samples of NMR signals. The controller performs fast spin echo pulse sequence in which series of RF refocusing pulses are produced by excitation unit to produce NMR spin echo signal.

DETAILED DESCRIPTION - A pair of crusher gradient and compensating gradient pulses are produced by gradient unit that surrounds each RF refocusing signal, to reduced image artifacts produced by Maxwell terms. An INDEPENDENT CLAIM is also included for NMR system operating method.

USE - In nuclear magnetic resonance imaging system.

ADVANTAGE - Artifacts caused by quadratic-cross Maxwell terms are removed using regular FSE phase correction techniques. Artifacts due to self squared terms are eliminated by adjusting the magnitude of pre-phasing lobe of readout gradient.

DESCRIPTION OF DRAWING(S) - The figure shows the conventional and

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L5: Entry 4 of 12 File: DWPI Sep 28, 2000

DERWENT-ACC-NO: 1998-438523
DERWENT-WEEK: 200063

TITLE: System which reduces Maxwell field artifacts with fast spin echo magnetic resonance images, e.g. in medical applications - used in MRI system which includes magnetic gradient generating appliances

INVENTOR: BERNSTEIN, M A; TAN, G ; ZHOU, X

PRIORITY-DATA: 1997US-0831684 (April 10, 1997), 1997US-0037599 (February 11, 1997)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
IL 123224 A	September 28, 2000		000	G01N033/48
DE 19801808 A1	August 13, 1998		017	G01R033/56
JP 10290795 A	November 4, 1998		015	A61B005/055
US 6008647 A	December 28, 1999		000	G01V003/00

INT-CL (IPC): A61B 5/055; G01N 33/48; G01R 33/56; G01V 3/00

ABSTRACTED-PUB-NO: DE 19801808A
BASIC-ABSTRACT:

The method applies to a nuclear magnetic resonance system with an appliance (140) for generating a polarisation magnetic field, an excitation appliance (150) generating an h.f. magnetic field to produce transverse magnetization in the spin subjected to the polarisation field and a receiver appliance (150) to acquire the nuclear magnetic resonance signals generated by the transverse magnetization and generate digitalized scanning signals from them. A first gradient appliance generates magnetic field gradients for phase coding the resonance signals, a second a field gradients for frequency coding of the resonance signals and a third field gradients to select the region from which the resonance signals are to be taken. A pulse control equipment is connected to all the above appliances. This can perform a scan in which one pulse sequence acquires the digitalized resonance signals which enable the reconstruction of an image to be performed.

During scanning the pulse control appliance can be used to provide a rapid spin echo sequence with which a sequence of h.f. refocussing pulses is generated by the excitation appliance to

generate a corresponding sequence of nuclear resonance spin echo signals. At the same time a pair of refractive gradient pulses are generated by the third gradient appliance which surround each refocussing h.f. refocussing pulse and it also generates a compensation gradient during an interval contiguous with the first pulse of the h.f. refocussing sequence. Its purpose is to reduce the image artifacts generated by the Maxwell fields

USE - With fast imaging methods for clinical MR.

ADVANTAGE - Suppresses effect of Maxwell fields on scanned images by changing gradient signal characteristics.
ABSTRACTED-PUB-NO:

US 6008647A EQUIVALENT-ABSTRACTS:

The method applies to a nuclear magnetic resonance system with an appliance (140) for generating a polarisation magnetic field, an excitation appliance (150) generating an h.f. magnetic field to produce transverse magnetization in the spin subjected to the polarisation field and a receiver appliance (150) to acquire the nuclear magnetic resonance signals generated by the transverse magnetization and generate digitalized scanning signals from them. A first gradient appliance generates magnetic field gradients for phase coding the resonance signals, a second a field gradients for frequency coding of the resonance signals and a third field gradients to select the region from which the resonance signals are to be taken. A pulse control equipment is connected to all the above appliances. This can perform a scan in which one pulse sequence acquires the digitalized resonance signals which enable the reconstruction of an image to be performed.

During scanning the pulse control appliance can be used to provide a rapid spin echo sequence with which a sequence of h.f. refocussing pulses is generated by the excitation appliance to generate a corresponding sequence of nuclear resonance spin echo signals. At the same time a pair of refractive gradient pulses are generated by the third gradient appliance which surround each refocussing h.f. refocussing pulse and it also generates a compensation gradient during an interval contiguous with the first pulse of the h.f. refocussing sequence. Its purpose is to reduce the image artifacts generated by the Maxwell fields

USE - With fast imaging methods for clinical MR.

ADVANTAGE - Suppresses effect of Maxwell fields on scanned images by changing gradient signal characteristics.

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Generate Collection

L5: Entry 5 of 12 File: DWPI Jun 6, 1995

DERWENT-ACC-NO: 1995-214772
DERWENT-WEEK: 199528

TITLE: Magnetic resonance angiography using fast spin echo sequence - uses first and second image data sets to form composite image data set which has increased contrast between blood vessel and other tissues

INVENTOR: KAO, Y; TURSKI, P A ; WINKLER, S S

PRIORITY-DATA: 1993US-0090725 (July 13, 1993)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
US 5422576 A	June 6, 1995		009	G01R033/20

INT-CL (IPC): G01R 33/20

ABSTRACTED-PUB-NO: US 5422576A
BASIC-ABSTRACT:

The method involves performing a fast-spin-echo scan in which a first NMR data set S1 is acquired from NMR echo signals having a relatively short echo time TE1 and a second NMR data set S2 is acquired from NMR echo signals having a relatively long echo time TE2.

The method also entails calculating a composite NMR data set S, from corresp values in the first and second NMR data sets S1 and S2 in accordance with the expression Sc = sqrt(S1 sqrd + USE/ADVANTAGE - For producing black blood magnetic resonance angiogram. Does not increase scanning time, while post-processing is relatively simple.

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Generate Collection

L5: Entry 6 of 12 File: DWPI Jan 3, 1995

DERWENT-ACC-NO: 1995-051372
DERWENT-WEEK: 199507

TITLE: Fast spin echo pulse sequence compensation for MRI system - reduces image artifacts caused by eddy currents by adjusting phase of RF excitation and RF refocusing pulses, and readout gradient dephaser pulse value to reduce zero and first order phase shifts along specific axes

INVENTOR: HINKS, R S

PRIORITY-DATA: 1993US-0091946 (July 15, 1993)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
US 5378985 A	January 3, 1995		009	G01V003/00
EP 634664 A1	January 18, 1995	E	010	G01R033/565
JP 07163544 A	June 27, 1995		007	A61B005/055

INT-CL (IPC): A61B 5/055; G01N 33/48; G01R 33/565; G01V 3/00

ABSTRACTED-PUB-NO: US 5378985A
BASIC-ABSTRACT:

The magnetic resonance imaging system performs a scan to acquire MR data using a fast spin echo pulse sequence, in which an RF magnetic field is produced by an RF excitation pulse followed by a series of RF refocusing pulses. Magnetic field gradients are applied to spatially encode echo signals that are acquired during the pulse sequence. The prescan, in which the fast spin echo pulse sequence is adjusted prior to conducting the scan involves acquiring MR data using the fast spin echo pulse sequence.

A phase profile is calculated for each of two echo signals in the acquired MR data. The relative phase of the RF excitation pulse and an RF refocusing pulse in the fast spin echo pulse sequence are adjusted to reduce the magnitude of a phase difference value between the two phase profiles. The process is repeated until the magnitude of the phase difference value is less than a preset value.

USE/ADVANTAGE - Reduces phase errors in FSE scan by adjusting relative phase of RF pulses in sequence. Reduces first order phase errors. Maintains readout gradient below threshold value.

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L5: Entry 7 of 12 File: DWPI Sep 6, 1994

DERWENT-ACC-NO: 1994-285640
DERWENT-WEEK: 199435

TITLE: Stabilised fast spin echo NMR pulse sequence with improved slice selection - reduces image artifacts in FSE pulse sequences by producing RF refocussing pulses which stabilise magnitude of acquired spin echo signals

INVENTOR: HINKS, R S; LEROUX, P L

PRIORITY-DATA: 1993US-0092172 (July 15, 1993), 1992US-0920952 (July 28, 1992)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
US 5345176 A	September 6, 1994		011	G01R033/48

INT-CL (IPC): G01R 33/48

ABSTRACTED-PUB-NO: US 5345176A

BASIC-ABSTRACT:

The NMR device comprises device for generating a polarizing magnetic field, excitation device for generating an RF excitation magnetic field which produces transverse magnetization in spins subjected to the polarizing magnetic field and receiver for sensing an NMR signal produced by the transverse magnetization and producing digitized samples of the NMR signal. A first gradient device generates a first magnetic field gradient to phase encode the NMR signal and a second gradient device generates a second magnetic field gradient to frequency encode the NMR signal. A pulse control device is coupled to the excitation device, first gradient device, second gradient device, and receiver device,

The pulse control device conducts a fast spin echo pulse sequence in which a series of NMR echo signals are produced in response to a corresponding series of RF refocusing pulses produced by the excitation device, and in which a set of NMR echo signals following the first NMR echo signal in the series of NMR echo signals are stabilized to have a similar amplitude (S) by altering the flip angle produced by RF refocusing pulses in the series, and the flip angle (theta) produced by the first RF refocusing pulse in the series is set to the same flip angle (theta) as that of the second RF refocusing pulse in the series.

L5: Entry 8 of 12 File: DWPI May 24, 1994

DERWENT-ACC-NO: 1994-166757
DERWENT-WEEK: 199420

TITLE: Nuclear magnetic resonance system for measurement of human tissue etc. - modifies amplitude of nutation angle produced in spins by corresponding RF re-focussing pulses to stabilise magnitude of early NMR echo signals during each slot

INVENTOR: HINKS, R S; LE ROUX, P L

PRIORITY-DATA: 1992US-0920952 (July 28, 1992)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
US 5315249 A	May 24, 1994		012	G01R033/20

INT-CL (IPC): G01R 33/20

ABSTRACTED-PUB-NO: US 5315249A
BASIC-ABSTRACT:

The NMR system generates a polarising magnetic field, and an

excitation device generates an RF excitation magnetic field which produces transverse magnetization in spins subjected to the polarizing magnetic field. A receiver senses an NMR signal produced by the transverse magnetization and produces digitised samples of the NMR signal. Gradient devices generate magnetic field gradients to phase encode and frequency encode the NMR signal.

A pulse controller is coupled to the excitation device, the gradient devices, receiver, and conducts a fast spin echo pulse sequence in which a series of NMR echo signals are produced in response to a single RF excitation pulse followed by a corresponding series of RF refocusing pulses produced by the excitation device, and in which the NMR echo signals are stabilised to a smoothly decaying amplitude by altering the flip angle produced by one or more of the initial RF refocusing pulses in the series.

ADVANTAGE - Reduced image artifacts

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L5: Entry 9 of 12 File: DWPI Dec 21, 1993

DERWENT-ACC-NO: 1993-413077
DERWENT-WEEK: 199351

TITLE: Three dimensional Fourier transform, fast spin echo, black blood magnetic resonance angiography for blood flow measurement - performing fast spin echo magnetic resonance measurements on three dimensional section of body to generate three dimensional intensity information

INVENTOR: ATLAS, S; LISTERUD, J

PRIORITY-DATA: 1991US-0799359 (November 27, 1991)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
US 5271399 A	December 21, 1993		006	A61B005/055

INT-CL (IPC): A61B 5/055

ABSTRACTED-PUB-NO: US 5271399A

BASIC-ABSTRACT:

The method for producing an angiograph of a body portion in which a fluid passes into the body portion involves subjecting the body portion to electromagnetic energy to cause a response related to the magnetization of the body portion.

Fast spin echo magnetic resonance measurements are performed on a three dimensional section of the body portion to generate K space oriented intensity information. The K space intensity information is processed to produce a black blood angiograph.

USE/ADVANTAGE - Non-invasive production of angiograph using MRI without need for administration of exogenous agents. Improves resolution and reduces imaging times.

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Generate Collection

L5: Entry 10 of 12 File: DWPI Jul 20, 1993

DERWENT-ACC-NO: 1993-242606
DERWENT-WEEK: 199330

TITLE: Simultaneous two-contrast fast spin echo NMR imaging system - modifies FSE pulse sequence by producing readout gradient waveform that produces two gradient recalled NMR echo signals

INVENTOR: HINKS, R S

PRIORITY-DATA: 1992US-0887989 (May 22, 1992)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
US 5229717 A	July 20, 1993		012	G01R033/20
EP 571212 A1	November 24, 1993	E	013	G01R033/56
IL 105665 A	November 28, 1994		000	G01R033/20

INT-CL (IPC): G01R 33/20; G01R 33/56

ABSTRACTED-PUB-NO: US 5229717A

BASIC-ABSTRACT:

A fast spin-echo NMR pulse sequence is modified to produce a pair of gradient recalled echo signals between each successive pair of RF refocusing pulses. The first gradient recalled echo signal in each pair is acquired and employed to reconstruct a first image and the second gradient recalled echo signal in each pair is employed to reconstruct a second image.

The two gradient recalled echo signals in each pair are separately phase encoded such that the two reconstructed images having contrasting T2-weighting.

USE/ADVANTAGE - Nuclear magnetic resonance imaging allows simultaneous acquisition of multiple images of differing contrast using fast spin echo NMR scan.